BTEC Assignment Brief

Qualification	Pearson BTEC Level 3 National Diploma in Engineering Pearson BTEC Level 3 National Diploma in Electrical/Electronic Engineering Pearson BTEC Level 3 National Diploma in Digital Engineering Pearson BTEC Level 3 National Extended Diploma in Engineering Pearson BTEC Level 3 National Extended Diploma in Electrical/Electronic Engineering Pearson BTEC Level 3 National Extended Diploma in Computer Engineering
Unit number and title	Unit 37 Computer Networks
Learning aim(s)	Learning Aim B: Plan the implementation of a secure computer network infrastructure to meet a client brief
Assignment title	Planning the implementation of a secure computer network
Assessor	
Issue date	
Hand in deadline	

Vocational Scenario or Context	You have been employed as a Network Engineer at a small engineering company that has just been awarded a major lucrative government contract. You have been tasked with planning and developing a secure computer network infrastructure to meet the requirements of this contract. The contract requires the implementation of 1 web server, 2 database servers, a data warehouse server and a file server. Bandwidth between the servers should be around 1 Gbit, and externally to the internet should be around 100Mbit. Security measures should be put in place to prevent hacking and snooping of data. All external communication should be encrypted, and backend systems should not be exposed. The network will need to support at least four users with access to shared files, folders, email, machines, for example 3D printer and intranet access. A network administrator will also need to be set up.

Task 1	Design a secure computer network to meet the requirements of the contract set out above. Ensure you justify your decisions on: • LAN / WAN • Number of users • Server capacity and Performance • Internal network bandwidth and data throughput • External 'internet' bandwidth • ISP Contention • Scalability In your designs describe the infrastructure required to meet the brief, as well as planning client support and security measures. All your designs must be justified to ensure you have the best optimised network. Considerations should be

	made for: • Operating Systems • Applications • User Policies • Authentication • Encryption services • Firewalls (and DMZ) You must ensure that your design is optimised so that it meets the client brief, scalability, performance and security protection measures. Your design documents must also include hardware and software selection with reasons for use, and logical and physical design schemes and diagrams that will be used to plan and prepare for the development, construction and test of the network
Checklist of evidence required	A collection of design documents including network diagrams, hardware and software procurement lists and lists of services required.

Criteria covered by this task:	
Unit/Criteria reference	To achieve the criteria you must show that you are able to:
B.P4	Plan a computer network including security protection measures to meet a given client brief
B.M2	Plan a computer network including security protection measures to meet a given client brief, while documenting alternative solutions, justifying the design decisions and considering scalability.
B.D2	Optimise the design of the computer network in terms of meeting the client brief, scalability, performance and security protection measures.

Note to assessor:

Scenario	The requirements are based on a typical engineering company's server requirements. Typically web servers should have external IP addresses on them, and an SSL certification installed. Database servers should have a fast connection to the web servers, and a data warehouse should have a reasonable connection. The data warehouse will be used for historical internal reporting so does not (and should not) have external IP addresses.